

WHAT TO DO IN CASE OF FIRE *

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OF all the various emergencies which may arise in the course of hospital life, none are attended with more dread, and at times with greater disorganization, than fire.

The value of discipline is measured by the results it enables us to obtain in unlooked-for and trying circumstances. When a fire breaks out we have in evidence to the most marked degree what systematic and well-conducted effort may do.

Every institution where there are sheltered helpless persons should have its staff of employés drilled in rescuing and protecting their charges if this danger arises.

Much could be accomplished in this line by means of frequent and unexpected drills, or some form of fire exercises after a schedule drawn up, and when once found satisfactory rigidly adhered to. In every drill of this kind each and every employé of the institution should have his or her place and duty assigned, and be expected to be found there when needed.

It is, of course, impracticable to draw up any set of rules which would apply to every hospital, but each institution can adopt such rules as best fit its own case, only when once adopted they should be permanent.

For example, one person whom we will call number one could be assigned to notify the fire head-quarters. Another, called number two, to inform the employés that a fire must be fought, and of the place where it started. Most hospitals situated in cities have private systems for sending in to the fire-engine houses an alarm of fire, and many hospitals have in addition at different points around the building small press-buttons or other means of turning in an alarm without wasting time in going to the office or some other central point. Every second at the beginning of a fire is worth several minutes later on, and it is for this reason that these auxiliary alarms are installed, and the firemen wish them to be used promptly if the occasion arises.

If the building is equipped with fire-hose, one of the male employés must be detailed to turn the water on the flames. As it may take some time for him to reach the fire, the nearest employé, unless otherwise assigned, should lose no time, but break one of the small glass hand-

* Demonstration given before the nurses of the Training-School of the Rochester City Hospital, New York.

grenades that are so generally seen and throw its contents into the flames. If the hospital is equipped with the small hand-extinguishers, one of these can be easily carried to the fire. These extinguishers are made to work by turning them upside down, when a small bottle of sulphuric acid or other mineral acid is emptied into a watery solution of soda and the resulting carbonic gas is ejected with considerable force on the flames and smothers them. A small nozzle allows the stream to be directed with accuracy.

Immediately upon the giving of such an alarm, which is best done by means of a gong loud enough to be heard all over the place, or better still, if available, by a steam whistle, every person connected with the hospital should take his proper place. The nurses are to report to the ward where they were last on duty, or if on detached duty remain with their patient. Each ward or floor should be in charge of one of the resident staff, who is held responsible that everything possible is done for those under his care, and his orders must be obeyed implicitly.

If there is an engineer or a fireman employed, one of them must be ready to draw the fires from the steam-boilers if the latter are in danger of being reached by the fire. In this way the further horrors of an explosion are avoided.

Ambulances should be kept ready to convey the sick to other institutions. Everyone must obey promptly all commands of the head of the institution.

Now, having seen that each one is in his or her proper place, how can we easiest remove the patients beyond the reach of the smoke and flames? Usually it is the smoke and not the flames that kills.

In illustration of this point let me refer to the fire which destroyed about thirty children at the orphan asylum in the city of Rochester about a year ago.

The fire started during the night, presumably in the basement. The smoke passed up the stairways and through the corridors into the dormitories. The fire department responded promptly and the fire was quickly extinguished, but when men were sent up the ladders into the dormitories they found that the children had been suffocated while they slept, but none of them had been burnt.

One is often surprised at the promptness with which certain formerly very helpless patients hurry to regions of safety. On the other hand, many patients must be helped or even carried, so it is very essential that this be done with as little expenditure of strength as is possible.

Where two bearers are available it is evidently a much easier task than for one person only. If the patient is able to help himself at all, the bearers may, by crossing hands and firmly grasping the wrists, make

what is called by children an "arm-chair." By this means the patient, especially if he is able to balance himself by putting his arms around the bearers' necks, can be carried some distance with a good deal of ease. Further, if the patient can stand, he need only be supported by his attendants. If, however, the patient is helpless, two bearers may pick him up in their arms without a great deal of labor, provided they go about it in the right way.

Let both bearers stand on the same side of the patient, one at his shoulders and the other at his hips. The bearer at the shoulders passes one arm under the patient's neck and downward along his spine, the other arm is passed directly across the body just under the shoulders. The bearer at the hips passes one arm under the small of the back and downward over the buttocks; the other arm, passed beneath the upper part of the thighs, draws the patient as close to the body of the bearer as is possible. Both bearers now lift together. Be sure that the burden is turned as far over on to the chest as is possible, for it is upon this fact that the trick of carrying a person with the least exertion depends. It is evident on a little thought that if so great a weight comes on the arm at any distance from the body the leverage afforded produces a strain that few can overcome. If, on the other hand, we turn the patient well over on to the chest, the weight is taken off the arms and transferred to the spinal column, which is far better adapted to the carrying of weights. A nurse who is practised in this method of carrying her patients will be surprised at the ease with which she can move her charges.

If but one bearer is available, the task is evidently much more severe; still, by turning the weight well over on to the chest, the task is greatly lessened. In this case one arm passes under the shoulders and down the back, as has been described, the other up under the hips towards the small of the back.

Another way, in case the patient can stand, is to kneel on one knee or to stoop in front of the patient, place one shoulder against the front of his thighs, grasp him with one arm directly above the knees, and draw one of his arms down over your shoulder. On rising you will have the patient well on your shoulders, and by means of one arm you are able to balance his weight. Of course, this way is applicable to fewer cases than the previous method.

A patient lying on the floor may be raised to his feet in this way: Stand at his head; see that he is face downward; place your hands under his armpits and raise him as far as you are able into an erect position; now place your shoulder against his body as just described, and then assume the last position.



A HELPLESS PATIENT CARRIED BY ONE PERSON



A PARTIALLY HELPLESS PATIENT



A HELPLESS PATIENT, FIRST POSITION



A HELPLESS PATIENT, SECOND POSITION

Of course, the easiest way to move a patient, but, unfortunately, one that is not always at our disposal, is on a mattress or on stretchers. However, we can improvise stretchers from many articles, as leaves of tables, window-blinds torn off, or pieces of plank. If mattresses are used, it usually takes four persons to carry one, a bearer at each corner.

The exhibit of the army medical corps at the Pan-American Exposition of the ways of conveying helpless patients was extremely interesting, as illustrating the various ways in which patients can be moved in the absence of stretchers. These methods are illustrated and described in the "Drill Regulations" of the Hospital Corps. This little book can be obtained from the War Department, and would be a good investment for any training-school desiring to teach such methods.

Besides the difficulties of carrying the patients, there is the ever-present danger of a jam about a place of exit. Good discipline and coolness would, of course, do much towards preventing this, but should a nurse trip or fall a crush of those behind would almost surely follow. The terrible loss of life at the Charity Bazaar in Paris is said to have been caused by such an accident. An elderly lady tripped in her skirt. Deductions are obvious. Women should lift their skirts or fasten them high enough to be no longer a source of danger not only at a time of fire, but in any emergency when they are in danger of falling.

We spoke earlier of the danger to the patient from the smoke that at once fills the air-passages, so preventing air from reaching the lungs, and, besides, by irritating these same air-passages produces severe inflammation and œdema of the lungs, which may be rapidly fatal. This danger must be guarded against by the nurse, not only for her own sake, but also for her patients'. This can be done by tying a wet handkerchief or compress over the face. The firemen are equipped with a more elaborate contrivance holding a wet sponge over the face, so that they can enter where the smoke is thick.

The places to which the patients are to be carried must be determined by circumstances. If the fire is slight, it might be sufficient to bring them simply into the next ward or out into a passage-way. Here is a good place to speak of the necessity of not leaving a door or window open so as to fan the draft, if it is possible to avoid so doing. Very often a fire that might have at first been confined to the room where it started, and so have been easily handled, has, through a door or window being left carelessly open, gotten such a start that it has done thousands of dollars' worth of damage. A former chief of the New York Fire Department once gave this advice to be followed when a fire broke out: "Avoid drafts. Keep doors and windows shut tight."

It is scarcely within the province of a nurse that she should per-

form any such feats of strength as to try to take a patient down a ladder or across to some near roof, but she should make every effort to place her charges away from immediate danger and where help from the firemen can reach them. This may be done by bringing the patients to the doors or the windows or to the end of the building or hall the farthest removed from the flames.

Perhaps by this time the smoke has so filled the wards or the halls that it is impossible to remain in them without endangering one's life. Where is the safest place in which to try to get away from the smoke and flame? It is on the floor. The hot air rises and carries with it the smoke and flame. When firemen are caught in this manner they keep as close as possible to the floor and creep or crawl to a window or door. To be sure, they often have a line of hose along which they may feel their way to the outside.

The hospital attendant unfortunate enough to be caught in such a scrape should try to determine her place in a ward or hall by feeling some familiar piece of furniture or along a wall towards the way out, and keep close to the floor and creep towards the door or window.

When one has reached a window in such a case the lower sash might be raised, and air passing in will carry up the smoke and likewise furnish sufficient oxygen to prevent suffocation.

If the window-sill is broad enough or strong enough to stand on, especially if there are any projections which one may cling to, this furnishes a place of refuge unless smoke or flames directly envelop one. Of course, if possible, the window behind one should be closed to prevent the outrushing draft from bringing the smoke or flame with it. One advantage of such a place is that it is pretty certain to attract attention and aid.

Should dizziness overcome you, try to grasp the window-frame or blind, and either close the eyes or look upward, so as not to be conscious of your height from the ground.

Another word of warning to those exposed in a burning building is not to jump until told to do so by some person on the ground. A ladder can usually be raised in time to reach you unless the flames break out directly about you.

How many lives are lost at fires by persons jumping too soon! If help reaches you, do exactly as you are told. The man who risks his life to save yours has generally some good plan of his own, and if you do not follow his directions it is probable that two lives may be needlessly lost.

Among the after-effects of a fire are burns of various degree, which are to be treated on the general rules laid down for such injuries. At



WHERE PATIENT CAN HOLD ON, LEAVING ONE HAND OF ATTENDANT FREE

the time it may be necessary to take some steps to relieve the patient's immediate suffering. His clothes should be gently cut off to avoid any possible tearing of blistered surfaces. All blisters are to be opened in as antiseptic a manner as is possible at the time, and the raw surfaces covered with some substance to exclude the air. A solution of soda bicarbonate (baking soda) of about the consistence of cream is a very good first-aid dressing and has the great advantage of being easily obtained and clean. The peculiar tendency of all burns to produce shock is to be kept in mind. To prevent this the patient may be given stimulants and opiates to relieve the pain.

Another accident at these times is the inhalation of smoke or of heated air, producing in the one case suffocation, in the other oedema and congestion of the lungs.

The treatment for suffocation is very similar to that for drowning, which it resembles in effect. In mild cases all that may be needed is to remove the patient to fresh air. On the other hand, the case may be so serious that only the most vigorous methods will suffice to maintain life.

We will now assume that we have one of these last types to deal with. First wipe the patient's mouth, throat, and nose free from all mucus, soot, and any other foreign matter that might interfere with the free passage of air to the lungs; now turn him face downward, and, grasping him by the hips, raise him so that if there is any obstructing body in the throat it will tend to be dislodged. Next lay him on his back with a small pillow or a folded coat under his shoulders. Draw the tongue forward and secure it so that it cannot fall back and obstruct the throat, thus preventing the passage of air to the lungs. Now, kneeling at the patient's head, unless he happen to be on a bed or table, grasp his wrists and draw his arms firmly and slowly upward and backward until we can make the backs of his hands touch above the head. Hold the arms in this position for a couple of seconds. This manœuvre, by drawing the ribs upward and outward, expands the chest cavity and allows the air to enter the lungs,—in other words, it imitates natural inspiration. Next seize the elbows and bring them firmly but gently against the lower ribs and pass them strongly against the body for three or four seconds. This forces the air in the lungs out and imitates the natural expiration. The entire series of movements known as artificial respiration should be repeated about sixteen times a minute, the normal rate of respiration. While one is doing this it may be necessary that a second person sees that the patient is kept warm or is further stimulated, as necessary. Oxygen gas is of great value if it can be had. Do not despair even if your efforts seem hopeless. Lives have been saved by keeping up the artificial respiration for hours.

Œdema and congestion of the lungs is a very serious complication, and requires rest, wet cups to the chest, opiates to relieve the pain, and hot mustard foot-baths to draw as much blood as is possible from the engorged lungs. The possibility of sudden death in this condition must be kept in mind.

THE COUNTING OF SPONGES IN ABDOMINAL SURGERY

BY MARY E. SMITH

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AMONG the many essential things for an abdominal operation is an absolutely correct sponge-count. While the surgeon is directly responsible to patient and friends for the successful carrying out of the work he has undertaken, it is nevertheless true that many of the details are performed by trained assistants, either doctors or nurses, and by common consent the sponge-count has become a part of the nurse's duties in the operating-room.

It is a matter for regret that we have to acknowledge that mistakes have been made resulting in the loss of life, but it is true, and so long as "to err is human" the possibility of such mistakes will exist. To guard against them, some surgeons suggest having specially trained surgical nurses; others have devised wire racks and different mechanical devices for putting the soiled sponges on for accurate counting during the operation; while still other methods are practised in different hospitals. But care during the operation (no matter how great) is not sufficient. It must be exercised *from the very beginning of the sponge-making* and kept up systematically to the end, so that if what seemed impossible would happen and a mistake occur, it would be detected at once and the responsibility fixed upon the person who made it.

The system in use at Harper Hospital, Detroit, Mich., probably has some features peculiar to itself, and, as it has been tried and proved correct for several years, it may not be amiss to mention the principles that underlie it, as well as its mechanical details.

When the nurse enters the operating-room for the training there she is, from the day she enters until she leaves, constantly impressed not only with the importance of all the work peculiar to that department, but especially with the following points:

1. That a mistake in the sponge-count is just as serious as would be the administering of a wrong dose of the most deadly drug.